

Title (en)
MULTI-STAGE HYDROPROCESSING IN A SINGLE REACTION VESSEL

Title (de)
MEHRSTUFENWASSERSTOFFBEHANDLUNG IN EINER EINZIGEN MESSVORRICHTUNG

Title (fr)
HYDROTRAITEMENT EN ETAGES MULTIPLES DANS UN REACTEUR UNIQUE

Publication
EP 0958245 B2 20120502 (EN)

Application
EP 97953272 A 19971216

Priority
• US 9723301 W 19971216
• US 77563696 A 19961231

Abstract (en)
[origin: US5705052A] A process for hydroprocessing liquid petroleum and chemical streams in a single reaction vessel containing two or more hydroprocessing reaction stages. The liquid product from the first reaction stage is stripped of H₂S, NH₃ and other dissolved gases, then sent to the next downstream reaction stage. The product from the downstream reaction stage is also stripped of dissolved gases and sent to the next downstream reaction stage until the last reaction stage, the liquid product of which is stripped of dissolved gases and collected or passed on for further processing. The flow of treat gas is in a direction opposite the direction in which the reaction stages are staged for the flow of liquid.

IPC 8 full level
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CPC (source: EP US)
C10G 49/002 (2013.01 - EP US); **C10G 65/02** (2013.01 - EP US); **C10G 65/04** (2013.01 - EP US); **C10G 2300/1096** (2013.01 - EP US); **C10G 2300/202** (2013.01 - EP US); **C10G 2300/207** (2013.01 - EP US); **C10G 2300/4018** (2013.01 - EP US); **C10G 2300/4093** (2013.01 - EP US)

Citation (opposition)
Opponent :
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US 5705052 A 19980106; AU 5705498 A 19980731; CA 2274460 A1 19980709; CA 2274460 C 20051025; DE 69729480 D1 20040715; DE 69729480 T2 20050609; EP 0958245 A1 19991124; EP 0958245 A4 20000517; EP 0958245 B1 20040609; EP 0958245 B2 20120502; JP 2001507738 A 20010612; JP 4074667 B2 20080409; NO 993242 D0 19990629; NO 993242 L 19990629; WO 9829343 A1 19980709

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US 77563696 A 19961231; AU 5705498 A 19971216; CA 2274460 A 19971216; DE 69729480 T 19971216; EP 97953272 A 19971216; JP 53008898 A 19971216; NO 993242 A 19990629; US 9723301 W 19971216